

REMARKS

This response is offered in reply to the office action mailed June 15, 2005.

In paragraph 3 of the office action, claims 11-15 are rejected under 35 USC 103(a) in view of the Murphy US Patent 5 716 720 taken with the Duhl US Patent 4 719 080 and EP 0 676 489.

Claims 11-15 are believed to distinguish over the '720 patent taken with the '080 patent and EP'489. For example, claim 11 recites a coated article comprising the recited superalloy substrate, an outwardly grown diffusion aluminide bondcoat on the substrate, and a ceramic thermal barrier coating disposed on the bondcoat and having improved resistance to spallation due to cyclic oxidation. Applicant's Figures 3, 4, and 5 and specification pages 8-10 illustrate the significant and unexpected prolongation of spallation life of the ceramic thermal barrier coating achieved.

This significant prolongation of spallation life of the thermal barrier coating is unexpected from the oxidation resistance exhibited by the bondcoated alloys shown in Applicant's Figure 2 where the outwardly grown diffusion aluminide bondcoated alloys are designated MDC-150L and the inwardly grown diffusion aluminide bondcoated alloys are designated LDC-2E.

As acknowledged by the examiner, the '720 patent does not disclose or suggest the claimed coated article having the features set forth in claim 11 such that a ceramic thermal barrier coating on a bondcoat exhibits improved resistance to spallation due to cyclic oxidation.

Applicant also notes that there is no suggestion whatsoever in the '720 patent that a superalloy composition including hafnium when provided with an outwardly grown diffusion aluminide coating and ceramic thermal barrier coating exhibits a significant and unexpected prolongation of spallation life of the ceramic thermal barrier coating as demonstrated by Applicant's Figures 3, 4, and 5 and specification pages 8-10.

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The examiner cites the '080 patent as showing a superalloy composition overlapping that of the pending claims. However, the '080 patent discloses a superalloy composition for making single crystal castings with improved creep strength, thermo-mechanical fatigue behavior, and oxidation resistance uncoated or coated with MCrAlY alloy overlay coating.

The '080 patent nowhere suggests Applicant's recited coated article comprising Applicant's superalloy substrate coated with an outwardly grown diffusion aluminide coating and ceramic thermal barrier coating to provide a significant and unexpected prolongation of spallation life of the ceramic thermal barrier coating. The oxidation resistance test results of the uncoated and MCrAlY alloy overlay coated superalloy of the '080 patent provide no suggestion of Applicant's claimed coated article where the particular combination of the recited superalloy/outwardly grown diffusion aluminide coating/thermal barrier coating result in a significant prolongation of spallation life of the thermal barrier coating.

Neither the '720 patent nor the '080 patent remotely suggests Applicant's coated article comprising the recited superalloy composition coated with an outwardly grown diffusion aluminide coating and ceramic thermal barrier coating exhibiting a significant and unexpected prolongation of spallation life of the ceramic thermal barrier coating by virtue of Applicant's combination of recited nickel base superalloy/outwardly grown diffusion aluminide bondcoat/thermal barrier coating.

The examiner cites EP '489 as showing sulfur levels held to 2 ppm as set forth in Applicant's claim 14. However, EP '489 is otherwise deficient for similar reasons as set forth above for the '080 patent.

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Applicant's believe claim 11 is not suggested by the teachings of the cited references and can only be obtained from the cited references by a prohibited hindsight analysis of the claimed invention. In particular, achievement of a significant and unexpected prolongation of spallation life of a ceramic thermal barrier coating by virtue of Applicant's claimed combination of recited nickel base superalloy/outwardly grown diffusion aluminide bondcoat/thermal barrier coating is not remotely suggested in the cited references taken alone or together. The same applies to claims 12-15 which recite certain rare earth elements and their concentration, sulfur concentration, and hafnium concentration.

Applicant has added new claim 16 that recites the single phase, platinum-modified diffusion aluminide coating described in Applicant's specification.

Applicant believes the pending claims are in condition for allowance and such action is requested.

Respectfully submitted,




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I hereby certify that this correspondence and enclosures are being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents
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